



# CIRM Shared Research Laboratory Information Form – Part Two

## Section A. Project Information

Project Title UCSC Shared Stem Cell Facility

Limited to 300 Characters

Project Start Date Mar 19, 2007

Construction Start Date Oct 1, 2007

Occupancy Date Apr 21, 2008

Total Part Two Funds Requested for Shared Laboratory Space \$2,340,959

Total Part Two Funds Requested for Stem Cell Techniques Course

Total Capital Funds Requested \$1,200,000

Note: All green fields are calculated values. Do not enter a value in the field.

Please indicate whether you propose to apply for funding of a Stem Cell Techniques Course along with the Shared Laboratory Space, or just the Shared Laboratory Space.

☒ Shared Research Laboratory only

☐ Shared Research Laboratory and Stem Cell Techniques Course

**NOTE: Please be aware that any information you provide in this form will be made publicly available.**

## Section A. 1. Program Director

Name	Professor	Lindsay	E	Hinck	
	Prefix	First	Middle	Last	Suffix
Email (office)	hinck@biology.ucsc.edu			This email address identifies you to CIRM. Please use this email address for all correspondence with CIRM.	
Application Number	CL1-00506-1			This field should fill automatically, based on the email address. If not, enter the number you received via email from CIRM, in the form "XX9-99999-9", where "X" is a letter, and "9" is a digit.	

## Section A. 2. Facilities Contact

Name	Mr.	Bruce		Hoffman	
	Prefix	First	Middle	Last	Suffix
Institution	University of California, Santa Cruz				
Other Institution	If your institution is not listed, please identify the name of the institution here.				
Position Title	Senior Engineering Project Manager				
Department	Physical Planning and Construction				
Address	1156 High Street, Barn G				
City	Santa Cruz			CA	Zip Code 95064
Phone Number	(831) 459-3845		Ext	Fax Number (831) 423-7436	
Email (office)	bshoffma@ucsc.edu			This email address identifies you to CIRM. Please use this email address for all correspondence with CIRM.	



## CIRM Shared Research Laboratory Information Form – Part Two

### Section A. 3. Public Abstract

See Appendix A.

### Section A. 4. Statement of Benefit to California

See Appendix A.



# CIRM Shared Research Laboratory Information Form – Part Two

## Section B. Laboratory Renovation Plan

Project Manager	Bruce Hoffman	Construction Supervisor	Steve Paul
Title	Senior Engineering Project Manager	Title	Campus Engineer
Company/Institution	UCSC	Company/Institution	UCSC

Describe plans for development/renovation of the shared laboratory space including fixed equipment costs. Include a description of the current space and how it will be renovated and reconfigured to form the laboratory. Include as attachments one 11x17 page of the current floor plan space and one 11x17 page of proposed floor plan of the renovated space. Describe all renovations that will be done. Describe how the project will be managed and tracked, as well as how change orders will be handled. For laboratories that are proposed to be located in leased space, provide information regarding the institution's long-term access to the leased space. Describe plans and schedule for all phases of development including design, construction, and installation of equipment leading to a functional laboratory. Give a proposed contingency plan in case of cost overruns. Any additional costs due to budget overruns will be the responsibility of the grant recipient. (narrative limited to 3 pages)

### Renovation Plan:

The UCSC Shared Stem Cell Facility (SSCF), housed on the first floor of Sinsheimer Laboratories on Science Hill, will be central to researchers from several departments who are currently engaged, in or plan to embark on, human embryonic stem cell research. The SSCF will consist of a suite of rooms serving the core functions of the facility, as well as an adjacent office and nearby autoclave room, totaling 2,007 assignable square feet (asf), as shown on the accompanying floor plans. The following table details each room, its size, use, and the major equipment or furnishings planned:

Rm #	ASF	Use	Major Equipment
104B	226	Office for technical staff	(3) desks, chairs, shelving
106	227	BSL2 human stem cell culture lab, investigator research	Biosafety cabinets (BSCs) - (3) 4' and (1) 6'; (1) 4' heated IVF downdraft table with fluorescence stereomicroscope; (1) double-stacked CO2 incubator; (1) double-stacked CO2/O2 incubator; clinical centrifuge; inverted microscope
106A	55	Anteroom to 106	Shelving; gas cylinders; shoe dust remover
109	453	Reagent and media storage and prep	-80 deg freezer; 4 deg deli case refrigerator; existing fume hoods
109A	172	Sample imaging and analysis	Live imaging microscope and computer; fluorescence activated cell sorter (FACS) and computer
109B	229	BSL2 human stem cell culture lab, primarily for training	BSCs - (2) 4'; (1) double-stacked CO2 incubator; clinical centrifuge; (2) inverted microscopes; CO2 tanks; freezer
109C	265	Sample prep and analysis, glassware washing, storage	Water purification system; undercounter glassware washer; spectrophotometer; luminometer
111	281	Microscopy	Confocal microscope; future 2nd microscope
137B	99	Autoclave room	Existing autoclave

The table below details the fixed equipment costs for this project, including tax, shipping and installation when known, or estimated when unknown:

Item	Qty	Rm #	Cost per Unit	Total
Class II A/B biosafety cabinet(s) 4 ft	3*	106	\$7,986	\$23,958
Class II A/B biosafety cabinet(s) 6 ft	1	106	\$10,857	\$10,857
MilliQ Biocel A10 Water Purification System	1	109C	\$6,000	\$6,000
MidAtlantic Diagnostics Heated IVF Downdraft Table, 4ft	1	106	\$10,172	\$10,172
Lancer 815LX Undercounter Glassware Washer	1	109C	\$8,300	\$8,300
TOTAL FUNDS REQUESTED FOR FIXED EQUIPMENT				\$59,287

\*Two additional 4' BSCs have already been purchased for rm 109B, contributing \$15,972 to the construction match.



## CIRM Shared Research Laboratory Information Form – Part Two

### Section B -- 1. Laboratory Renovation Plan (continued)

Currently, rooms 106-111 are shelled space without improved ceilings. Most of the rooms have scaffolding structures with various utilities attached that must be removed. Room 104B is currently being used as a mixed office/research space without typical lab amenities. Room 137B is designed as a small chemistry lab with a fume hood, a floor drain, and exhaust ducting. All rooms are immediately available for this project.

The renovation work includes the addition of suspended ceilings, new walls, benches, cabinetry, and relocation and/or upgrading of water, air, vacuum, ventilation, power, data, alarm, and phone service. The major work is highlighted below:

**Ceiling, wall, and floor construction:** Walls will be constructed within room 106 to create an anteroom (106A), between rooms 109B and C, and between rooms 109C and 111. Rooms 106, 106A, 109A, 109B, 109C and 111 require construction of a suspended ceiling with vinyl coated tiles. Rooms 106 and 109B require gasketed lighting fixtures and other measures to prevent the exchange of air with all adjacencies. The existing sprinkler system will be modified to accommodate the new ceiling. The flooring of room 137B will be replaced with a trowel-on epoxy floor coating suitable for an autoclave environment, and an exhaust hood will be installed.

**Benches and cabinetry:** Room 109C will receive free-standing lab benches with suspended cabinetry and two wall benches, as well as wall-mounted cabinetry and shelving. Room 111 will receive two free-standing lab benches and wall shelving.

**HVAC upgrades to rooms 106 and 109B:** Supply air will be filtered by 2 fan-powered HEPA filter units per room. Room 106 requires approximately 3 tons of cooling and 109B requires 2 tons. As existing cooling is insufficient, new fan coils and condensing units will be installed to inject outside air to supplement the central system. These rooms will be positive pressure relative to all adjacencies, with 10-15 air changes per hour.

**Plumbing:** All required piped utilities are present; piping needs to be rerouted to new service points and demolished/capped where not needed. This includes DI water, natural gas, vacuum, compressed air, and industrial hot and cold water. A new sink and service to a new glassware washer will be provided in room 109C. Also, steam will be brought to the autoclave room from the building source, and condensate will be piped to an existing flash tank.

**Power/Data:** Existing power and data receptacles will be augmented with additional receptacles as needed. Room 111 will receive four 208V outlets on dedicated circuits for the confocal microscope. One emergency power (E-power) circuit is present in room 109 (for the -80 freezer); two additional E-power outlets will be added in rooms 106 and 109B (for critical incubators). Emergency alarm loop wiring will be extended to rms 106 and 109A.

#### Project Management:

The project will be managed and tracked by the following campus units: Capital Planning and Space Management (responsible for programming and budgeting), Physical Planning and Construction (PP&C) (responsible for design and construction management), School of Engineering Facilities Support (responsible for client and facilities coordination), and the Center for Biomolecular Science and Engineering (responsible for establishing technical scope). The same organizational structure, construction delivery methods, and accounting and budget control procedures that the UCSC campus uses for all major capital improvement projects will be followed.

Campus and external design architects and engineers have verified existing laboratory utilities and laboratory space properties, and prepared a preliminary design. A cost estimate was generated by an independent estimator. This preliminary work formed the basis for the budget and schedule in this grant application.

If the grant is awarded, PP&C engineer Bruce Hoffman, who has successfully managed technically complex renovation projects for over ten years, will provide day-to-day project management, including cost and schedule control. Prior to selecting an outside contractor, UCSC Campus Engineer Steve Paul is serving as "construction supervisor." Anticipated costs will be re-estimated at the end of design development, and at 50% and 95% completion of construction documents. If estimated costs exceed budget, value engineering measures will be undertaken to reconcile project budget and scope before beginning the next project phase. In response to recent construction cost volatility, the campus now frequently includes additive bid alternates as a contingency against unexpectedly high bids. As work on the project proceeds, opportunities for including such bid alternates will be explored.



## CIRM Shared Research Laboratory Information Form – Part Two

### Section B -- 1. Laboratory Renovation Plan (continued)

with the design team.

The contractor will be selected using standard UC bidding procedures, and will execute a standard UC construction contract. Contractor change order requests will follow procedures detailed in the construction contract. They will be reviewed in detail by the project manager for accuracy and compliance with relevant contract provisions and, if the proposed change affects design intent or technical specifications, with the design architects and engineers. Change order causes will be recorded and tracked. Change order proposals adding project scope will not be considered. Increased construction costs beyond those funded in the grant will be shared equally by the Baskin School of Engineering and the Division of Physical and Biological Sciences.

Project financial reports will be generated monthly and will include all project encumbrances and expenses. Regular construction progress meetings, with facilities support staff in attendance, will track and coordinate the work, and arrange the necessary utility shut-downs and building re-commissioning. A network of campus e-mail announcements and work orders will keep campus staff informed of project progress.

#### Project Schedule:

The outside agencies for permit, review, and inspection are the Access Compliance Section of the Division of the State Architect (DSA) and the Designated Campus Fire Marshal (DCFM). In past projects the DSA has approved a site egress plan and power assisted entry for this building. The building has fire sprinklers throughout and an automatic fire alarm system. The DCFM is expected to require alterations to sprinkler head locations and changes to audio-visual fire alarms for this project.

The project schedule indicates that UCSC would begin preparation of preliminary plans immediately upon submission of the grant application, with the understanding that the initial fees and costs incurred in doing so will be borne by campus (and are "at risk"). This initial funding will come from the campus match funds. Doing so permits the entire project schedule to be accelerated by 4 months, with completion in early May, 2008.

It is anticipated that preliminary plans and working drawings can be completed prior to award announcement, assumed to be July 15, with approval of working drawings completed within one week of award announcement. UCSC would then be prepared to immediately proceed to advertising for the construction contract. Bid opening would occur one week following completion of the 2-week advertisement period, with an additional week's wait then required for filing of any protest.

The gap of 5 weeks between award of the construction contract (Aug 27, 2007) and the start of construction activities (Oct 1, 2007) is necessary to allow for issuance of contract documents, obtaining contractor bonds and insurance, and contract execution. The 3 weeks between conclusion of construction and beneficial occupancy will allow for any final inspections and completion of punchlist items by the contractor.

All moveable equipment will be installed, and the UCSC shared stem cell laboratory facility fully functional by May 5, 2008.





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## Section B. 1. Schedule/Timeline and Drawdown of Funds Table

Provide a realistic schedule and drawdown of funds for completing each activity/milestone, as indicated below.

#	Activity/Milestone	Start Date	Completion or Milestone Date	Amount of CIRM funds to be drawn
1	Grant Award (estimate)		Jul 15, 2007	
2	Request for Planning Funds (10% of Construction Costs)		Jul 16, 2007	\$100,000
3	Prepare Preliminary Plans	Mar 19, 2007	Apr 19, 2007	
4	Approval of PPs		Apr 26, 2007	
5	Prepare Working Drawings	Apr 26, 2007	Jul 6, 2007	
6	Approval of WDs		Jul 20, 2007	
7	Request Construction Contract funds (80% of Construction Costs)		Jul 20, 2007	\$800,000
8	Advertise for Construction Contract	Jul 27, 2007	Aug 10, 2007	
9	Award Construction Contract		Aug 27, 2007	
10	Construction Activities	Oct 1, 2007	Mar 31, 2008	
11	Completion of Equipment Purchases		Mar 31, 2008	
12	Request Equipment Purchase funds		Apr 30, 2008	\$948,194
13	Beneficial Occupancy		Apr 21, 2008	
14	Notice of Completion		May 5, 2008	
15	Request Construction Completion Amount (10% of Construction Funding)		May 5, 2008	\$100,000

"Preliminary Plans" (PPs) represent approximately 35 percent of the design effort, or may be considered the product of completing the "Design Development" (DDs) phase of architectural work.

"Working Drawings" (WDs) represent drawings and specifications from which a contractor may determine the full extent of work contemplated in the project for purposes of submitting a bid; may be referred to as completion of "Construction Documents" (CDs) phase of architectural work.



## CIRM Shared Research Laboratory Information Form – Part Two

### Section B. 2. Budget

Provide a complete budget for the renovation that includes construction costs, design fees, administration of the project, other costs (i.e. installation of equipment) and a construction contingency (limited to 7-10% of the construction budget). Identify the amount of CIRM funds requested and the matching funds (construction requires 20% matching funds). Provide a complete budget for movable equipment (equipment requires 20% matching funds). **(narrative limited to 3 pages)**

(Note: An Excel spreadsheet can be attached as long as the total submission for this Section is limited to 3 pages)

#### Construction Budget:

The UCSC Shared Stem Cell Facility (SSCF) is proposed as a laboratory renovation project. UC Facilities guidelines suggest using cost information from similar University projects and estimating from costs of building systems/components or, whenever possible, at the level of building trades, similar to that done by contractors who are bidding a project. Davis Langdon, an independent estimating firm familiar with the UC Capital Improvement Budget (CIB) process and UC bid histories, has prepared a conceptual cost plan with program, pre-design, product and trade information from Glass Associates, Inc. (architects), Young Engineering Services (mechanical engineers), and Central Pacific Engineering (electrical engineers).

As shown on the attached Budget Summary, the total estimated renovation project budget is \$1,200,000, which includes \$1,000,000 in CIRM funds and \$200,000 of campus matching funds as described in Section B.4. 74.4% of the project total amount, or \$892,972, is for construction, with a construction contingency of 7% (\$63,028). Of the construction contract costs, \$501,500 (58.7%) is for mechanical and electrical work, \$114,000 (13.3%) for interiors, \$20,000 (2.3%) for building shell, \$170,500 (20%) for function equipment, and \$49,000 (5.7%) for demolition and site protection. Construction costs not part of the construction contract include fixed equipment (two biosafety cabinets), controls commissioning, utility shut downs, and an owner-purchased builders risk insurance policy.

Soft costs of \$244,000 include design fees for architectural and engineering consultants and administrative costs for internal project management and inspection, surveys and documentation, and miscellaneous other items such as Fire Marshal plan review and regulatory agency review. Anticipated design fees are based upon initial proposals received from cost estimators Davis Langdon, Glass Associates, Inc., Young Engineering Services and Central Pacific Engineering. Anticipated internal costs are based upon estimates of hours required to provide project management and administration and construction inspection services at established hourly rates. The campus is exploring ways to reduce anticipated design and project management costs; any savings will be used for construction.

Davis Langdon's conceptual cost plan reflects current probable construction costs in the project locality, plus escalation to the anticipated start of construction (October 1, 2007) at 1% per month, based on current trends; it also includes a 10% design contingency to reflect the preliminary nature of plans developed to date. Unit rates were obtained from historical records and/or discussions with contractors, and reflect current cost bids in the area. All unit rates relevant to subcontractor work include the subcontractor's profit and overhead. Pricing assumes competitive bidding for every portion of the construction work for all subcontractors and general contractors, with a minimum of three bidders for all items of subcontracted work and two to three general contractor bids. Campus will conduct aggressive outreach to local contractors to ensure an adequate pool of bidders resulting in more competitive bids.

#### Moveable Equipment:

As detailed on the accompanying spreadsheet, from a total moveable equipment budget of \$1,140,959, UCSC requests \$948,194 from CIRM for equipment associated with the SSCF; the remaining \$192,765 is provided by a campus match. Most of this equipment was described in Part One of this application under "Laboratory Equipment and Management Plan". In addition to the equipment already described, we are requesting funds for a confocal microscope to enable imaging of samples several cells thick, such as embryoid bodies, blastoderms and other structures, and to perform multiple-marker fluorescent analysis. We are also requesting funds for a CO<sub>2</sub>/O<sub>2</sub> dual control incubator. Recent studies suggest that reduced oxygen tension in human embryonic stem cell culture environments (mimicking the O<sub>2</sub> concentration in vivo) enhances plating efficiency and cell growth while maintaining pluripotency and normal karyotype. Both of these items will greatly enhance the research capabilities of our investigators.



## CIRM Shared Research Laboratory Information Form – Part Two

### Section B. 3. Budget Summary Table

Complete the budget summary for the use of CIRM funds.

Note: All colored fields contain calculated data. Please do not enter anything in those fields.

Other Project Costs				
Budget Category		Total Budget	CIRM Grant Funds	Institutional Match
Construction Contract Costs		\$ 855,000	\$ 855,000	\$ 000
Other Construction Costs (institutional)		\$ 37,972	\$ 22,000	\$ 15,972
<b>Subtotal Construction</b>		\$ 892,972	\$ 877,000	\$ 15,972
Design Fees		\$ 155,000	\$ 59,972	\$ 95,028
Administrative Costs		\$ 89,000	\$ 000	\$ 89,000
Construction Contingency		\$ 63,028	\$ 63,028	\$ 000
<b>Total Construction</b>		\$1,200,000	\$1,000,000	\$ 200,000
Movable Equipment		\$1,140,959	\$ 948,194	\$ 192,765
<b>Total Budget</b>		\$2,340,959	\$1,948,194	\$ 392,765
Gross Square Feet	2280	\$ 526.32	\$ 438.60	Const Costs/GSF
Assignable Square Feet	2007	\$ 597.91	\$ 498.26	Const Costs/ASF





# CIRM Shared Research Laboratory Information Form – Part Two

## Section B. 4. Institutional Commitment

Provide a detailed description of the amount and source of matching funding for each request that requires matching funds. The requirement of matching funds can be satisfied if the institution can document funds, excluding other grant funds, committed to similar projects (i.e., renovation of lab space and equipment purchase) after January 1, 2005. Detail the use of the space after the three year period is completed. (narrative limited to 2 pages)

UCSC is providing a total match of \$392,765, on a requested budget of \$1,948,194, which represents a 20.2% match. The construction match of \$200,000 consists of \$183,028 in central campus funds committed by Executive Vice Chancellor David Kliger, \$15,972 in fixed capital equipment for the SSCF purchased in 2006 with Howard Hughes Medical Institute (HHMI) funds to Professor David Haussler, and \$1,000 from UCSC's Institute for Quantitative Biomedical Research (QB3) operating funds expended earlier this year to embark on the planning and budget estimate process. The match on moveable equipment totals \$192,765 and is comprised of \$146,308 in moveable capital equipment already purchased for the SSCF in 2005 and 2006 with HHMI funds to Professor Haussler, \$41,457 in capital funds committed by HHMI to Professor Haussler for moveable equipment in the SSCF, and \$5,000 in gift funds committed to the SSCF, also to be used for moveable equipment.

	Construction	Equipment	Total
Requested Funds	\$1,000,000	\$948,194	\$1,948,194
>20% Match	\$200,000	\$192,765	\$392,765
Project Total			\$2,340,959

### Source of Match

Central campus funds	\$183,028	
Fixed equipment funded by HHMI	\$15,972	
QB3 funds	\$1,000	
HHMI shared moveable equipment		\$146,308
HHMI renovation funds		\$41,457
Gift funds		\$5,000

A breakout of the matching funds allocated to moveable equipment is shown on the spreadsheet that accompanies section B.2. A UCSC Cost Share Addendum Form that lists all of the sources of matching funds and requires the signatures of the unit heads responsible for each fund source has been completed, signed and filed with UCSC's Office of Sponsored Projects. Furthermore, Executive Vice Chancellor David Kliger has issued a memorandum to the relevant campus officials summarizing the match commitments as well as the commitment made by the Division of Physical and Biological Sciences and the Baskin School of Engineering to guarantee any cost overruns after an award is made.

The campus is taking on the additional risk of funding the preparation of preliminary plans and working drawings prior to the announcement of awards, which will accelerate the overall construction schedule by 4 months. If this project is not funded by CIRM, other means of funding will be sought.

The Shared Stem Cell Facility is planned to continue operation well beyond the life of this award, to meet the needs of UCSC faculty and research scientists performing human embryonic stem cell research and related teaching. There are matching funds committed towards the Facility Manager and laboratory supplies for three years, and a number of other potential sources of funding have been identified to support the facility beyond that timeframe. These include QB3 funds, gift funds, and user fees. When federal funding for stem cell research becomes less restrictive, those funds will be pursued as appropriate.

In terms of growth planning, UCSC hopes to create more extensive stem cell research space in the new Biomedical Sciences Building planned to be constructed on campus, which has an anticipated completion date of December 2009. The building is being designed so that, with the assistance of a CIRM larger facilities grant that the campus intends to pursue, an entire floor could be dedicated to stem cell research. At that time, it is expected that the Sinsheimer SSCF would continue being utilized as a stem cell facility for faculty and researchers in Sinsheimer Laboratories, and as a teaching laboratory. Space in the new building would accommodate newly hired and relocated faculty performing stem cell research with primary laboratory space, core facilities and offices.

UCSC is aligned with the goal of Proposition 71 that more than 50% of the goods and services used in CIRM-supported research



## CIRM Shared Research Laboratory Information Form – Part Two

### Section B. 4. Institutional Commitment (continued)

be purchased from California suppliers. Recent history at UCSC with projects of this size suggests that the construction and equipping of this shared facility will be provided by California businesses.

Supporting this effort, UCSC strives to adhere to the University of California Policy on Green Building Design, Clean Energy Standards, and Sustainable Transportation Practices. Incentive is provided to campuses for reduced travel distances of raw materials and manufactured products to the building site. This encourages the purchase of building materials and products that are extracted and manufactured within the region, thus supporting the local economy and reducing environmental impacts.



## CIRM Shared Research Laboratory Information Form – Part Two

### Section C. Stem Cell Techniques Course (if applicable)

Based on the information provided in Part One of the application describing the course, include a justification of the additional space required and additional equipment requested, if any. Include additional square footage and provide as an attachment one 11x17 page of the proposed floor plan of the renovated space. (narrative limited to 1 page)

Limit narrative to visible field area.



# CIRM Shared Research Laboratory Information Form – Part Two

## Section C. 1. Schedule and Drawdown of Funds Table (if applicable)

Provide a realistic schedule and drawdown of funds for completing each activity/milestone, as indicated below.

#	Activity/Milestone	Start Date	Completion or Milestone Date	Amount of CIRM funds to be drawn
1	Grant Award (estimate)			
2	Request for Planning Funds (10% of Construction Costs)			\$ 000
3	Prepare Preliminary Plans			
4	Approval of PPs			
5	Prepare Working Drawings			
6	Approval of WDs			
7	Request Construction Contract funds (80% of Construction Costs)			\$ 000
8	Advertise for Construction Contract			
9	Award Construction Contract			
10	Construction Activities			
11	Completion of Additional Equipment Purchases			
12	Request Additional Equipment Purchase funds			
13	Beneficial Occupancy			
14	Notice of Completion			
15	Request Construction Completion Amount (10% of Construction Funding)			\$ 000

"Preliminary Plans" (PPs) represent approximately 35 percent of the design effort, or may be considered the product of completing the "Design Development" (DDs) phase of architectural work.

"Working Drawings" (WDs) represent drawings and specifications from which a contractor may determine the full extent of work contemplated in the project for purposes of submitting a bid; may be referred to as completion of "Construction Documents" (CDs) phase of architectural work.

"Additional Equipment" represents equipment to be used for the Stem Cell Techniques Course.



## CIRM Shared Research Laboratory Information Form – Part Two

### Section C. 2. Budget (if applicable)

Provide a complete budget for the additional renovation that includes construction costs, design fees, administration of the project, other costs (i.e. installation of equipment) and a construction contingency (limited to 7-10% of the construction budget). Identify the amount of CIRM funds requested and the matching funds (construction requires 20% matching funds). Provide a complete budget for additional movable equipment (equipment requires 20% matching funds). **(narrative limited to 3 pages)**

(Note: An Excel spreadsheet can be attached as long as the total submission for this Section is limited to 3 pages)



## CIRM Shared Research Laboratory Information Form – Part Two

### Section C. 3. Budget Summary Table (if applicable)

Complete the budget summary for the use of CIRM funds.

Note: All colored fields contain calculated data. Please do not enter anything in those fields.

Other Project Costs				
Budget Category		Total Budget	CIRM Grant Funds	Institutional Match
Construction Contract Costs				
Other Construction Costs (institutional)				
Subtotal Construction				
Design Fees				
Administrative Costs				
Construction Contingency				
Total Construction				
Additional Movable Equipment				
Total Budget				
Gross Square Feet		\$ 0.00	\$ 0.00	Const Costs/GSF
Assignable Square Feet		\$ 0.00	\$ 0.00	Const Costs/ASF



## CIRM Shared Research Laboratory Information Form – Part Two

### Section D. Signature Page

Complete, save, and print Part Two of the Shared Research Laboratory Grant Information.

Submit electronic application as an email attachment to [laboratory@cirm.ca.gov](mailto:laboratory@cirm.ca.gov) no later than 5:00pm PST on March 16, 2007.

Mail\* the original executed Part Two application and five (5) copies to:

**Shared Research Laboratory Grant Application**

California Institute for Regenerative Medicine

210 King Street

San Francisco, CA 94107

**\*Mailing must be postmarked no later than March 16, 2007.**

**Applications will not be accepted after these deadlines.**

Project Start Date

Construction Start Date

Occupancy Date

Total Part Two Funds Requested for Shared Laboratory Space

Total Part Two Funds Requested for Stem Cell Techniques Course

Total Capital Funds Requested

#### Facilities Contact

Mr. Bruce Hoffman  
Senior Engineering Project Manager  
Physical Planning and Construction  
University of California, Santa Cruz  
1156 High Street, Barn G  
Santa Cruz, CA 95064  
(831) 459-3845  
bshoffma@ucsc.edu

\_\_\_\_\_  
Authorized Organizational Official

\_\_\_\_\_  
Date

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Program Director

\_\_\_\_\_  
Date

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Title



# CIRM Shared Research Laboratory Information Form – Part Two Supplement

## Project Information

Application Number

Program Director Name:

## Historical Performance

Provide information on past performance for 3 projects.

	Project 1	Project 2	Project 3
Brief Project Title	Lab for Adaptive Optics	Alts for Eng, Phase 2	Baskin Eng Bld Clean Room <span>+</span>
Original Budget (Total project cost)	\$4,061,000	\$5,274,000	\$1,769,000
Final project cost	\$4,061,000	\$5,274,000	\$1,769,000
Scheduled Completion Date	Feb 28, 2005	Nov 30, 2006	Nov 30, 2006
Actual Notice of Completion Date	May 31, 2005	Apr 30, 2007	Apr 30, 2007
Gross Square Feet involved	1,912	8,384	2,582
Assignable Square Feet involved	1,821	5,399	2,016
Approximate number of change orders	3	28	7
Value of all change orders & claims	\$ 189,260	\$ 47,608	\$ 3,678
Type of construction management	Design-Bid-Build	Design-Bid-Build	Design-Bid-Build

## Laboratory Alteration Projects

Please enter the number of laboratory alteration projects completed by the applicant in the past 2 years (in the range of \$1-5 million in project cost), and the approximate total dollar value that these projects represent.

Total Laboratory Alteration Projects

Approximate Total Value

Limit Budget Justification to visible field area.



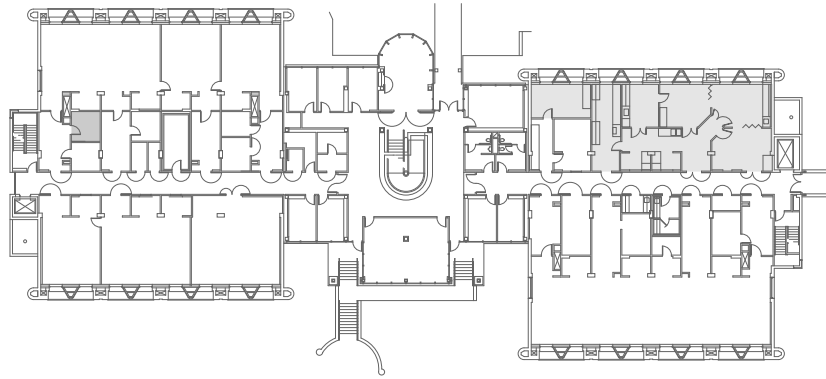
**UCSC Shared Stem Cell Facility Renovation Project  
Budget Summary**

		% of Construc. Contract Costs	% of Renovation Project Total
<b>Hard Costs</b>			
<b>Construction</b>			
<b>Construction Contract Costs</b>			
Floor & roof structures	\$7,000		
Exterior cladding	\$6,000		
Roofing, waterproofing, & skylights	\$7,000		
<i>Shell Subtotal</i>	<i>\$20,000</i>	2.3%	
Interior partitions, doors, & glazing	\$67,000		
Floor, wall, & ceiling finishes	\$47,000		
<i>Interior Subtotal</i>	<i>\$114,000</i>	13.3%	
Function equipment & specialities	\$170,500	20.0%	
Plumbing systems	\$85,500		
Heating, ventilating, & air conditioning	\$248,000		
Electric lighting, power, & communications	\$146,000		
Fire Protection Systems	\$22,000		
<i>Mechanical &amp; Electrical Subtotal</i>	<i>\$501,500</i>	58.7%	
Site protection & selective demolition	\$49,000	5.7%	
<b>Construction Contract Costs Subtotal</b>	<b>\$855,000</b>	100.0%	
<b>Other Construction Costs (Institutional)</b>			
Owner Furnished Owner Installed Fixed Equipment	\$15,972		
Controls commissioning	\$10,000		
Builder's risk insurance	\$2,000		
Utility shutdowns	\$10,000		
<b>Other Construction Costs (Institutional) Subtotal</b>	<b>\$37,972</b>		
<b>Construction Total</b>	<b>\$892,972</b>		74.4%
<b>Construction Contingency</b>			
7% Construction contingency	\$63,028		5.3%
<b>Soft Costs</b>			
<b>Design Fees</b>			
(Glass Associates, Central Pacific Engineering, Young Engineering Services)			
Programming and initial budgeting	\$30,000		
Design development	\$40,000		
Construction documents	\$55,000		
Bidding and contract administration	\$30,000		
<b>Design Fees Total</b>	<b>\$155,000</b>		12.9%
<b>Administrative Costs</b>			
<b>Internal Fees</b>			
Inspection	\$19,000		
Project management and administration	\$40,000		
<b>Internal Fees Total</b>	<b>\$59,000</b>		
<b>Surveys, Tests, Plans, Specifications</b>			
Surveys, Document Reproductions	\$10,000		
<b>Special Items</b>			
Fire Marshal plan review	\$5,000		
Outside agency review	\$10,000		
CAD services	\$5,000		
<b>Special Items Total</b>	<b>\$20,000</b>		
<b>Administrative Costs Total</b>	<b>\$89,000</b>		7.4%
<b>Renovation Project Total</b>	<b>\$1,200,000</b>		100.0%

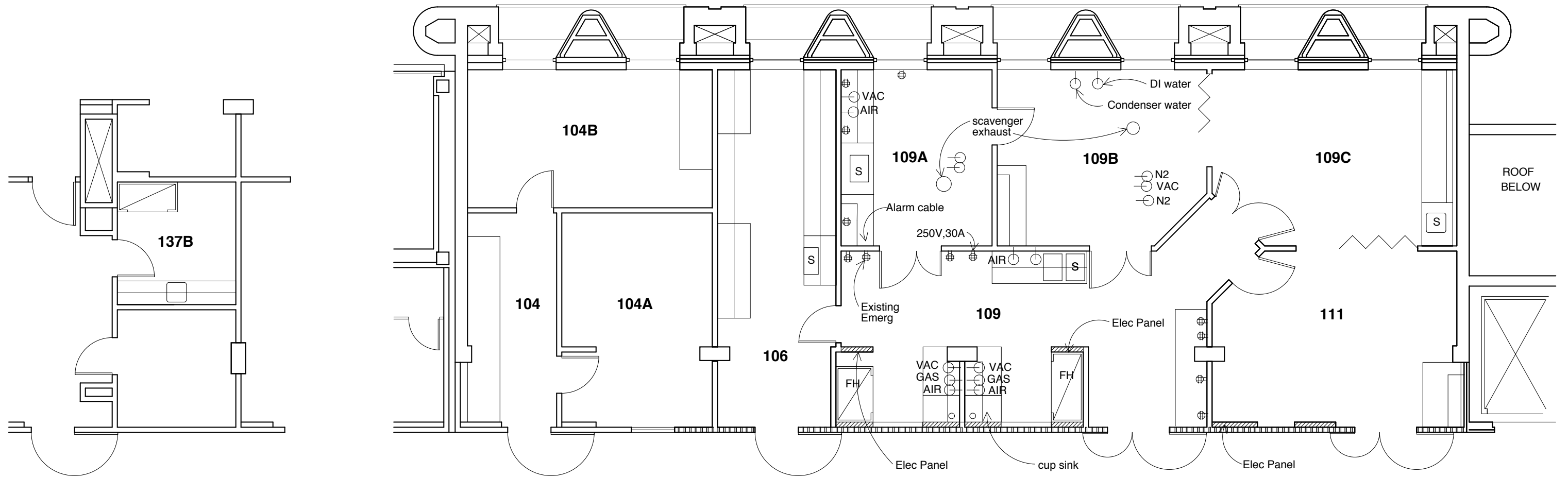
**CIRM Shared Research Laboratory Application - Part Two**  
**Project Title: UCSC Shared Stem Cell Facility**  
**Application Number: CL1-00506-1**  
**March 15, 2007**

**Moveable Equipment List & Match**

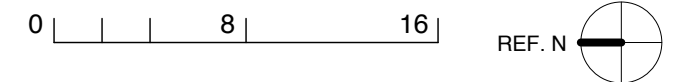
Item	#	Location	Cost per	Total	Fund Source	
					CIRM	Match
BD Biosciences FACS Aria	1	109A	465,000	465,000	465,000	
Leica SP5 Confocal Microscope	1	111	400,000	400,000	400,000	
Leica MZ16 Fluorescence Stereomicroscope	1	106	45,000	45,000	45,000	
Sanyo MCO-36M Auto CO2/O2 Incubator (double)	1	106	16,250	16,250	16,250	
Fisher Isotemp Deli Case 4.0 C. Refrigerator	1	109	5,240	5,240	5,240	
(-) 80 Freezer	1	109	5,000	5,000		5,000
37.0 C CO2 incubator (double)	3	106 and 109B	8,352	25,056	16,704	8,352
Zeiss Axiovert 200 Live Imaging Microscope	1	109A	96,358	96,358		96,358
Axiovert Inverted Microscope	3	106 and 109B	7,247	21,741		21,741
Spectramax 384-well Spectrophotometer	1	109C	21,217	21,217		21,217
Victor Light Luminometer	1	109C	20,381	20,381		20,381
Clinical Centrifuge with Rotor, 96-well and 50 ml Buckets	2	106 and 109B	9,858	19,716		19,716
<b>TOTAL</b>				<b>1,140,959</b>		
<b>CIRM TOTAL</b>					<b>948,194</b>	
<b>MATCH TOTAL*</b>						<b>192,765</b>
<b>MATCH %</b>						<b>20.3%</b>



KEY PLAN - LEVEL 1 SINSHEIMER LABS



Note: Data Receptacles Consist Of Two Data Ports.



UCSC Shared Stem Cell Facility (SSCF)  
Modifications to  
Rooms 104B, 106, 109, 109A, 109B, 109C, 111, and 137B  
Sinsheimer Labs Building  
University of California, Santa Cruz

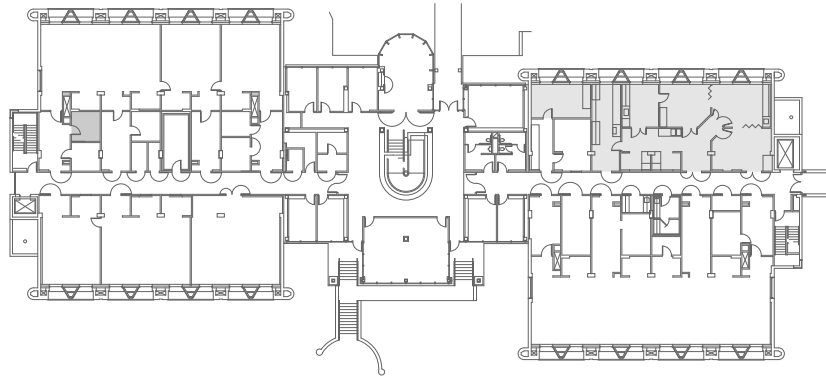
## EXISTING PLAN

**GLASS** Associates, Inc.  
Architecture & Planning  
300 Lakeside Drive, Suite 1975  
Oakland, CA 94612  
(510) 893-2345  
FAX (510) 893-8238

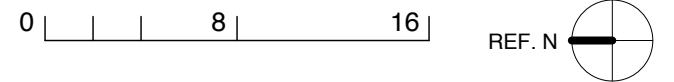
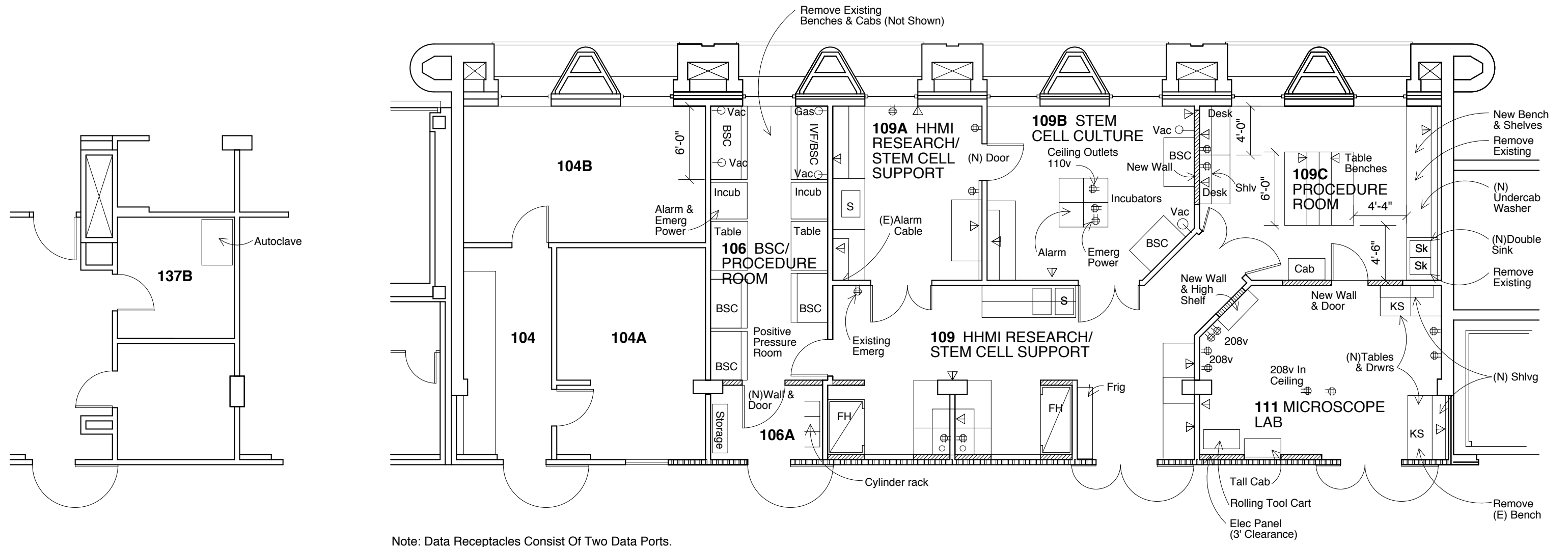
Date 3/16/07

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1 Of 2 Sheets



KEY PLAN - LEVEL 1 SINSHEIMER LABS



UCSC Shared Stem Cell Facility (SSCF)  
Modifications to  
Rooms 104B, 106, 109, 109A, 109B, 109C, 111, and 137B  
Sinsheimer Labs Building  
University of California, Santa Cruz

## PROPOSED PLAN

**GLASS** Associates, Inc.  
Architecture & Planning  
300 Lakeside Drive, Suite 1975  
Oakland, CA 94612  
(510) 893-2345  
FAX (510) 893-8238

Date 3/16/07

Drawn EG, BT

2 Of 2 Sheets



## Appendix A

Application: CL1-00506-1

### Title: UCSC Shared Stem Cell Facility

#### Public Abstract:

We have assembled a team of researchers with the aim of elucidating the molecular and cellular mechanisms that regulate stem cell self renewal and differentiation. Drawing on their broad range of expertise in development, genetics, genomics, molecular, cell and computational biology, these researchers will use interdisciplinary approaches to tackle problems concerning how genes are regulated in human embryonic stem cells (hESCs), and how this regulation influences their ability to both self-renew and differentiate into specific cellular subtypes. Defining and ultimately controlling this process is an essential step in designing stem cell-based therapies. These projects are aimed at providing insights and tools for neurological and genetic conditions such as Parkinson's Disease, ALS, CHARGE Syndrome, and Down Syndrome, and in aiding the development of gene therapy strategies. The work is funded in part from CIRM SEED grants to our faculty. In addition, we are committed to campus growth in this area, with faculty hires slated for expertise in various aspects of stem cell biology. Supported by a CIRM Training Grant, we are also committed to training a new generation of stem cell researchers – graduate students and postdoctoral fellows who will gain the knowledge and skills to embark on their own careers in this field.

To achieve these goals, we propose to build a Shared Stem Cell Facility (SSCF) by renovating 2000 square feet of space in the building where hESC research currently occurs. Our institution currently has no stem cell facility - hESC research is currently limited to NIH-approved lines because of the lack of separate, appropriately funded space. In addition, this facility will significantly expand and enhance the research space available for experimentation with hESC, in general, at our institution. The creation of a central facility dedicated to hESCs is essential for both on-going and new research, as well as for training. The resources and expertise provided by the SSCF will encourage additional faculty to use hESCs in their research and create new opportunities for faculty already committed to hESC research. For example, our faculty are eager to initiate projects that involve the use of non-approved cell lines that are free of the biological limitations of the approved lines, such as new hESC lines in which the mechanisms of self renewal and differentiation are altered, and in lines bearing disease causing mutations. This work will not be possible without a facility dedicated to hESC research that is free of federally-imposed restrictions.

#### Statement of Benefit to California:

The California Institute for Regenerative Medicine came about because of a mandate from the citizens of California who voted to invest state money into human embryonic stem cell research. Supporters of Proposition 71 waved signs reading "Save Lives with Stem Cells" and news reports predicted that the measure's passage would "put California at the forefront of the field." While individual projects such as the shared stem cell facility in this proposal will not directly save lives or put California at the forefront, the work that will take place promises to move the field towards successful stem cell-based therapies, and to help give rise to technologies and intellectual property that can serve as the basis for new companies in California. The research to take place in the proposed facility will contribute to the characterization of stem cell lines that will populate an envisioned stem cell bank in California. By allowing advanced hESC research, this facility will strengthen pre-existing international collaborations and stimulate more, thus bringing together worldwide efforts in a common cause. Finally, the ability to perform hESC research at this and other CA institutions that is not restricted to the federally approved lines will attract highly talented researchers from around the country. The research to be carried out in these facilities will greatly accelerate the rate at which we acquire new knowledge about the properties and uses of stem cells. Californians will be proud of this investment in infrastructure to facilitate new discoveries and the training of new researchers, positioning California to lead the way to improving and saving lives through regenerative medicine.